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# CANADIAN PATENT

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PAN AND INSERT THEREFOR

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(11,077/64) (11,078/64) Sweden

No. OF CLAIMS 24



This invention relates to bed pans and insert therefor.

The pans at present in use in nursing are usually made of enamelled or stainless sheet metal or the like. The cleaning of these pans is troublesome and takes up a great deal of the time of hospital staff. In many cases, there is, in addition, a risk of deficient hygiene if the pans are not handled and cleaned according to directions. This invention has as its object the production of a pan which renders possible a substantial reduction of work for hospital staff and at the same time meets high standards of hygiene.

10 A bed pan according to the invention comprises a bearing portion adapted to support a patient and having an inner space for receiving a loose throw-away insert arranged to receive excrements, said bed pan being designed such that, after the use of the pan and while holding the pan in a substantially horizontal position, the insert and its contents can be removed in a direction substantially downwards from said inner space of the bearing portion.

According to an embodiment of the invention the bearing portion comprises a bottom plate supporting the pan insert and adapted to be swung downwards, so that the insert and its contents can be removed.

20 In another embodiment of the invention the pan comprises a bearing portion and an enclosure portion which entirely or partially encloses the bearing portion, said enclosure portion comprising a bottom plate for supporting a pan insert, the said bearing portion and the said enclosure portion being displaceable in relation to one another so that the said bottom plate supporting the insert can be moved horizontally to facilitate removal of the insert from the pan in a downward direction.

The bearing portion, the lower plate supporting the insert, and the upper plate supporting the patient, may be integral with each other. In one embodiment of the invention, the bearing portion of the pan may be formed by parts obtained by cutting and folding a sheet of a rigid material, for example corrugated board.

30 The pan according to the invention is primarily intended to be used together with a bowl-shaped insert of a water-proof, preferably temporarily water-impervious, material which, for example, may be paper e.g. kraft paper,

or another fibrous material. The fibrous material may be combined with a layer of a polymer material, preferably soluble in water.

In the latter case, the paper may be chosen such that the combination material after immersion in water disintegrates rapidly, thereby rendering it possible to flush the insert with its contents directly into an ordinary sewage line.

Embodiments of the invention will now be described in greater detail, reference being had to the accompanying drawings showing some embodiments of pans and inserts according to the invention.

10        Figure 1 shows a front elevational view of a first embodiment of a pan having a bottom adapted to be swung down,

Figure 2 shows the pan of Figure 1 in perspective view;

Figure 3 shows a coherent sheet of material having cut portions, adhesive surfaces, and crease lines, and adapted to be folded to form a pan according to Figures 1 and 2;

Figure 4 shows a second embodiment of a pan according to the invention;

Figure 5 shows a side view of a bed pan construction according to a third embodiment of the invention;

20        Figure 6 shows a bearing portion of the third construction in a perspective view;

Figure 7 shows a perspective view of a portion intended to enclose the bearing portion shown in Figure 6 and to support the pan insert;

Figure 8 is an end view of the assembly in a position in which the portions shown in Figures 6 and 7 are displaced in relation to one another for effecting removal of the pan insert,

Figure 9 shows a pan insert according to the invention;

Figure 10 is a perspective view of a further form of insert;

Figure 11 is a cross-sectional view of the insert of Figure 10;

30        Figure 12 shows a sheet of material with crease lines, adapted to be assembled to form an insert according to Figures 10 and 11,

Figures 13 and 14 show a third form of pan insert, seen in a plan

view and cross-section, respectively; and

Figures 15 and 16 show a fourth form of pan insert according to the invention, in plan view and cross-section, respectively.

The pan shown in Figure 1 is formed from a sheet 41 of corrugated paperboard or other material which is relatively rigid, and also of light weight and inexpensive. The construction includes an upper plate 42 which is intended for supporting a patient and has, therefore, substantial surface dimensions in order to obtain adequate distribution of the patient's weight. The construction further comprises a bottom plate 43 for supporting a pan insert 57 which can be thrown away after use. The insert is formed of a material having a strength and rigidity which allows it to receive urine, excrement etc. and does not contribute to the support of the patient. The insert is made of single thickness paper material which disintegrates readily in water. The insert has an inner layer of material rendering the insert permanently or temporarily water-impervious. Examples of material for sealing the insert permanently are wax and polymer material, such as polyethylene. Examples of polymer material for rendering the paper temporarily water-impervious are water-soluble polymers of the protein or carbohydrate type, such as gelatine, casein, vegetable rubbers of various types, starch and alginate and derivatives thereof.

The pan construction according to Figure 1 comprises, in addition, a bearing portion in the form of a rectangular unit the main portion of which is defined by parallel walls 52a and 53a and parallel walls 55a and 56a extending perpendicular to walls 52a and 53a. These walls cooperate with walls 46, 47, and 48, extending parallel to and spaced from the walls 52a and 53a, for supporting the patient's weight. The walls 52a, 53a, 55a and 56a define an inner space for the pan insert 57, which space opens upwardly to a hole 50 in the upper plate 42. The bottom plate 43 can be swung down as shown in Figure 1 for removal of the insert. The opening 50 of the upper plate 42 is formed by a cover 49 cut out of the plate 42.

The pan construction according to the embodiment shown can be manufactured from a coherent sheet 41 of corrugated paper board or other material.

The sheet 41, Figure 3, is divided into four parts 42, 43, 44 and 45, with parts 46, 47, and 48, lying therebetween. The parts of the sheet 41 are defined by lines indicated by dashes in Figure 3. The part 44 has an H-shaped cutout 51 therein and, by folding up along dashed crease lines of Figure 3, both the walls 52a and 53a and lugs 52b and 53b, connected to and acting as supports for the walls 52a and 53a, respectively, are formed. In a similar way the part 45 has an H-shaped cutout 54 therein and by folding up along dashed crease lines of Figure 3 both the vertical end walls 55a and 56a and supporting portions 55b and 56b, respectively connected to said walls, are formed.

The pan construction according to Figure 1 or an equivalent pan construction according to the invention can be manufactured of a single sheet in a different manner from that shown in Figure 3. Also, it is not essential that the pan be manufactured from a single piece though this is a practical solution, since it enables storage of the pan blanks in a minimum of space. The manual work involved in folding the sheet, provided, as shown in Figure 3, with cutouts and crease lines, so that a pan construction according to Figures 2 and 3 is obtained, is simple and can be carried out by hospital staff rapidly after a little training.

Figure 4 shows a pan construction of the kind described with reference to Figures 1 to 3, comprising a bearing portion 58 provided with an inner space for an insert. However, a number of paper sheets 60 are fastened at one edge 61 to the lower edge of the bearing portion 58 and are wrapped about the bearing portion. The paper sheets have holes therein and are positioned so that the holes are located above the hole in the upper plate of the bearing portion 58. The bearing portion 58 is provided with a hinged bottom plate 59 for supporting a pan insert. After the pan is used, the uppermost sheet 60a, which protected the sheets below, is torn off so that the pan can be reused for the same patient, while still maintaining the same standards of hygiene.

In Figures 5 to 8, another embodiment of a pan construction according to the invention is shown. This construction comprises a bearing portion 62 and an outer portion 68 enclosing the bearing portion. The bearing portion



comprises an upper plate 63 adapted to support the patient and provided with a central opening 64. The portion 62 comprises, in a similar manner to that shown in Figures 1 to 3, supporting walls 65 and a lower plate 66 with a central rectangular opening 67. The portion 62, therefore, defines an inner space which opens upwardly and downwardly and in which space a loose pan insert 57 can be mounted. In use, after mounting of the insert, the outer portion 68 of the pan construction is located about the inner portion 62. The outer portion 68 has an upper part 69, two vertical end walls 70 and a bottom part 71. The parts 69, 70 and 71 enclose a space 72 into which the inner portion 62 of the pan construction can be inserted. The upper plate 69 is provided with an opening 73 corresponding to the opening 64 of the inner portion 62. After the pan is used it is carried to a sewer line inlet, where the inner portion 62 is displaced in relation to the outer portion 68 in the direction of the arrow P shown in Figure 8. The loose insert 57 and its contents fall down through the opening 67 in the inner portion 62 and into the sewer without contaminating the pan construction by splash or the like from the insert contents. The inner portion 62 may be made of a rigid material, for example corrugated paper board, in the aforescribed manner, while the outer portion 68 may be made of a thinner material, for example, card board and need not have substantial rigidity. In this embodiment a new outer portion 68 can be used every time the pan is to be used, in order to meet standards of hygiene.

The pan insert according to the invention is made of a relatively cheap material, preferably a fibrous material, for example cellulose. The material may be a combination material comprising two or more layers, each having a different function. Thus, it may comprise the combination of a fibrous layer and a polymer layer applied thereon, the fibrous layer providing the insert with the necessary strength and stability, and the polymer layer increasing the water resistance of the fibrous layer permanently or temporarily. The insert, however, may consist entirely of paper, for example kraft paper of a quality suitable for this purpose, or it may consist only of polymer material. It is convenient, but not necessary, to manufacture the insert of a material adapted to be flushed directly into the sewage line, in which

case the material must be adapted to disintegrate in the sewage water within a short time, for example within about three hours. The fibrous material in this case may be provided with a polymer material rendering the fibrous material temporarily water-impervious but soluble after the insert is flushed out into the sewage line. Examples of such polymer materials are water-soluble polymers of protein or carbohydrate type, such as gelatine, casein, vegetable rubber, starch and alginate and derivatives thereof. Particularly suitable are water-soluble cellulose derivatives such as methyl cellulose, hydroxyethyl cellulose, ethylhydroxyethyl cellulose and carboxymethyl cellulose. Also, some entirely synthetic polymers are suitable, such as, for example, polyvinyl alcohol, polyethylene oxide, and polyvinylpyrrolidon. When the polymer material per se is not of sufficiently high molecular weight to effect the required degree of temporary water imperviousness, a suitable gelling agent can be used for treating the fibrous material on which the polymer layer is to be applied. Thereby, a rapid decomposition of the polymer layer is prevented and, instead, upon its being moistened, the layer is transformed to a gel state which forms a temporary water barrier.

When using a pan with an insert of the aforesaid type there is the risk that urine and other liquid may splash over the edge of the insert, when the pan is removed from the patient. According to the invention the pan, can be designed so that such splash is prevented. This can be achieved by providing the edges and/or the bottom of the pan insert with portions preventing or obstructing movements of the liquid which may cause splashing.

In one modification of the insert according to the invention the walls of the insert are provided with inwardly projecting lugs at the upper edge to prevent the liquid contents from splashing. In another modification the bottom of the insert is provided with portions preventing or obstructing splashing movements of the liquid contents.

In Figure 9 an embodiment of a pan insert 80 according to the invention is shown. The insert is moulded, for example by compression moulding, from a material of the aforesaid type. The compression moulding can be such that the inserts can be stacked one in another, thereby requiring minimum space

for storage and transport.

The embodiment of the pan insert according to the invention shown in Figures 10 to 12 comprises a bottom 82, two short sides 83, two longitudinal sides 84, lugs 85 at the upper edge of the short sides 83, and lugs 86 at the upper edge of the longitudinal sides 84. The lugs 85 and 86 are folded inwards of the insert to form together a barrier which prevents liquid passing over the edges of the side pieces when, during transport of the insert, splashing movements are caused. As appears from Figure 12 this insert can be made of a plain piece of sheet material which, for this purpose is provided with  
 10 crease lines 87, defining the short sides of the insert, and with crease lines 88 extending perpendicular to the crease lines 87 to define the longitudinal sides of the insert, and crease lines 89 formed at the corners of the sheet to render possible folding of the sheet 81 to form a complete insert according to Figure 10. In this case the sheet 81 is folded downwards along the crease lines 87 and 88 and upwards along the crease lines 89. The lugs 86 shown in Figure 11, in a view corresponding to line A-A in Figure 10, can be bent inwards to the extent desired.

The embodiment of the pan insert according to the invention shown in Figures 13 and 14 comprises a bottom 91, two longitudinal sides 92 and two  
 20 short sides 93. According to the invention the bottom 91 is provided with projections 94 having, in the embodiment shown, the form of ridges and being adapted to obstruct splashing movements of the liquid in the insert.

The form of pan insert 95, shown in Figures 15 and 16, comprises a bottom 96, two longitudinal sides 97 and two short sides 98. The longitudinal sides 97 and the short sides 98 are inclined obliquely inwardly in order to obstruct splashing movements of liquid in the insert. To increase this effect, the bottom 96 of the insert is provided with projections 99, which, in the embodiment shown, have the form of ridges extending longitudinally, and with  
 30 similar projections 100 along each short side 98. The projections contribute to the retention of the insert contents in the insert during transport of the insert.

Modifications can be made within the scope of the invention. As re-

gards the bearing portion of the pan, for example, this may comprise, for example, compression moulded rigid mouldings, profiles, or the like, of lightweight wood fibre material, rigid expanded plastic, or the like, adapted to be stacked into one another, and such a moulding may be combined with or comprise a hinged bottom plate for supporting the pan insert, the upper surface of the moulding being arranged to carry the body weight of the patient. As regards the pan insert it need not always be self-disintegrating, because the disintegration of the insert, required for its flushing into ordinary sewage lines, can be effected in mills or the like specially adapted for this purpose and connected to the sewer, into which mills the inserts, inclusive of their contents, are fed and in which necessary disintegration is carried out.

are integral with one another and with an upper sheet portion of the pan for receiving the patient's weight and with a lower sheet portion serving as a bottom plate for supporting the pan insert, the said four sheet portions being connected with each other by intermediate portions the width of which corresponds to the height of the pan.

18. A bed pan according to claim <sup>16</sup>17 in which the upper sheet portion of the pan for receiving the weight of the patient is provided with a central rounded opening allowing the passage of excrements from the patient to the pan insert.

19. A bed pan according to claim <sup>17</sup>18 comprising a cover for sealing the said opening in the upper sheet portion of the pan, which cover is the part of the upper sheet portion obtained by cutting out the said central opening.

20. A bed pan according to claim <sup>16</sup>17 comprising a bearing portion with a central upwardly and downwardly open inner space for receiving a pan insert and at least one portion formed of sheet material and which portion at least partially encloses the bearing portion and is adapted to support the pan insert when the pan is being used, said sheet material portion being slidably removable from said bearing portion.

21. A bed pan according to claim <sup>19</sup>20 comprising an outer portion enclosing the bearing portion, said outer portion covering the upper surface of the bearing portion and being provided with a central opening corresponding to the opening in the bearing portion, and with a lower portion serving as a bottom plate for supporting the pan insert.

22. A bed pan according to claim <sup>16</sup>17 comprising a plurality of sheets placed upon one another, said sheets at their one edge being fastened to the pan and substantially entirely enclosing the same, so that they cover both the upper surface and the lower surface of the pan, the portion of each sheet covering the upper surface of the pan being provided with a central opening corresponding to the inner space of the pan accommodating said insert.

23. A bed pan according to claim 1 which is formed of a compression moulded piece of a rigid porous fibrous material made temporarily water-imperious in that it is combined with a polymer material adapted to dissolve in water.

24. A bed pan according to claim 1 including an insert in said inner space, said insert comprising a combination material comprising at least one layer of a paper readily disintegratable in water and at least one layer of a water-soluble polymer material.

25. A bed pan according to claim <sup>23</sup> wherein the insert comprises a bottom and side portions connected thereto, the bottom and the side portions being formed and provided with parts adapted to prevent splashing movements of liquid material in the insert.

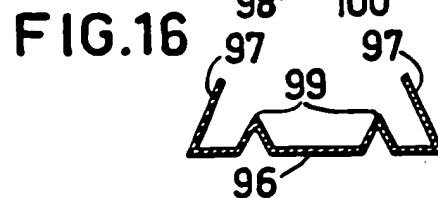
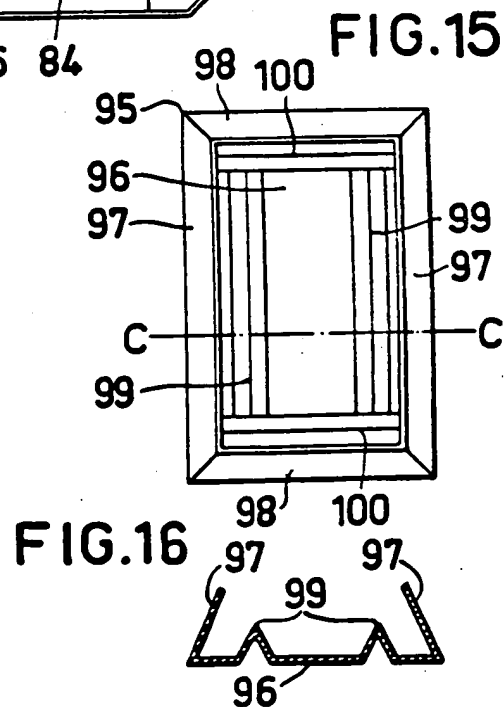
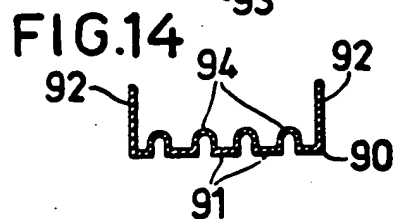
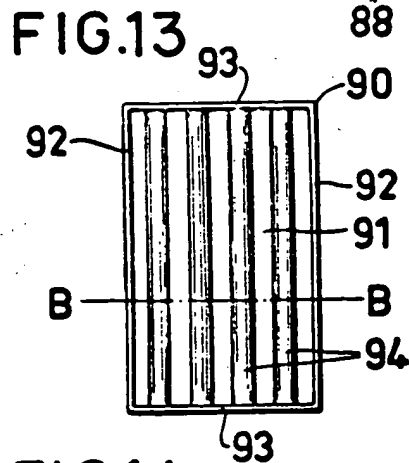
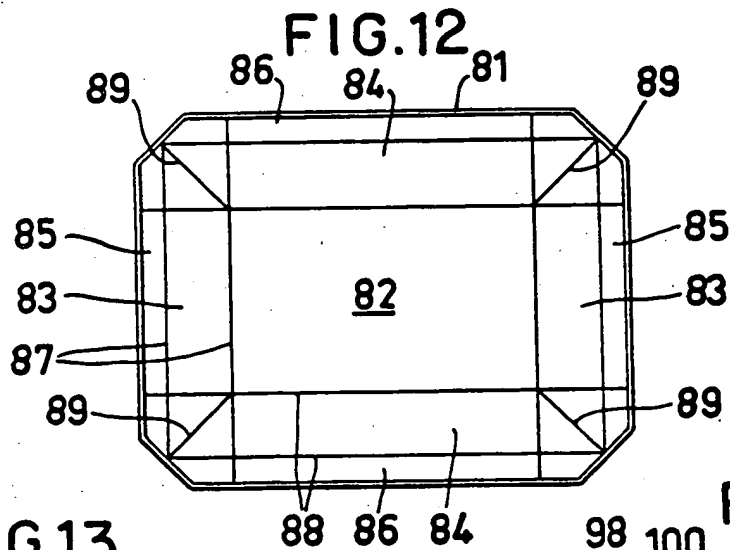
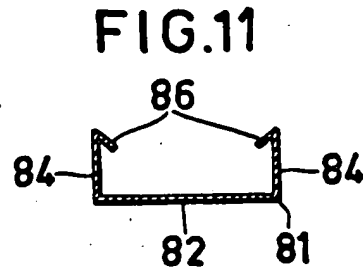
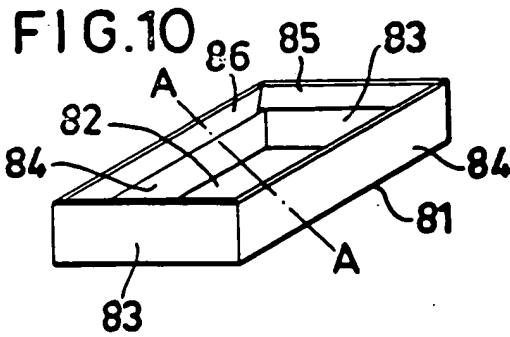
THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE  
PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A bed pan comprising a bearing portion adapted to support a patient and having an inner space for receiving a loose throw-away insert arranged to receive excrements, said bed pan comprising a bottom plate supporting said loose insert introduced into the inner space of said bearing portion, said bottom plate being adapted to be removed from the position in which it supports said loose insert, such that after the use of the pan and while holding the pan in a substantially horizontal position, the insert and its contents can be removed in a direction substantially downwards from said inner space of the bearing portion.
2. A bed pan according to Claim 1 in which said bottom plate is adapted to be removed in a substantially horizontal direction with respect to the bearing portion.
3. A bed pan according to Claim 1 in which said bottom plate is hingedly mounted to the bed pan and adapted to be swung downwards from the position in which it supports said loose insert.
4. A bed pan as claimed in Claim 1 in which said bearing portion consists of walls at least partly enclosing the inner space into which said insert is to be introduced.
5. A bed pan according to Claim 4 in which said walls are in the form of hollow structures.
6. A bed pan according to Claim 1 in which the bearing portion comprises a material consisting of at least one layer of paper and of a stiffening material bonded to the paper.
7. A bed pan according to Claim 6 in which the bearing portion comprises a material of the corrugated paperboard type.

9. A bed pan according to claim <sup>6</sup>7 in which the bearing portion comprises a sandwich material consisting of at least two paper layers and a stiffening material in the form of rigid expanded plastic mounted therebetween.
10. A bed pan according to claim 1 comprising an upper plate having a large area to allow the weight of the patient to be distributed.
11. A bed pan according to claim 1 in which the bearing portion is at least partially formed by portions obtained by cutting and folding up at least one sheet of rigid material.
12. A bed pan according to claim 1 being rectangular when seen in a horizontal projection.
13. A bed pan according to claim <sup>11</sup>12 in which the bearing portion is formed at least partially of parts obtained by cutting and folding up two sheet portions of rigid sheet material, the parts obtained by cutting and folding up of one sheet portion being adapted to support the other sheet portion.
14. A bed pan according to claim <sup>12</sup>13 in which the two sheet portions are, in the completed pan, located at a distance from one another corresponding to the depth of the pan, said sheet portions being formed from a single sheet of material and connected with one another via an intermediate portion having a width corresponding to the depth of the pan.
15. A bed pan according to claim <sup>13</sup>14 in which the parts of said sheet portions obtained by cutting and folding up co-operate with one another to effect such a relative locking of the completed pan that the pan is held together without the use of other members or adhesive.
16. A bed pan according to claim <sup>14</sup>15 in which there are provided cutouts in the two sheet portions of substantially H-shape to form supporting portions of the pan which are substantially rectangular when seen in a horizontal projection.
17. A bed pan according to claim <sup>15</sup>16 in which said two sheet portions



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FIG. 4

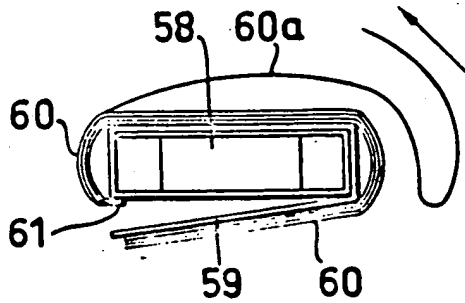


FIG. 5

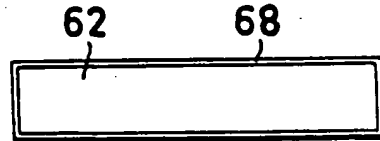


FIG. 6

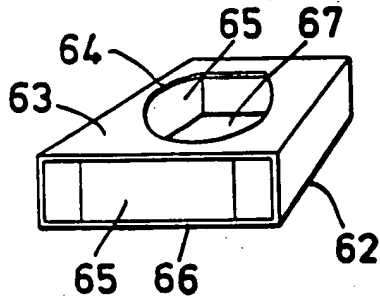


FIG. 7

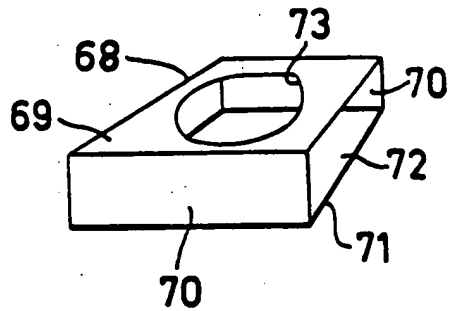


FIG. 8

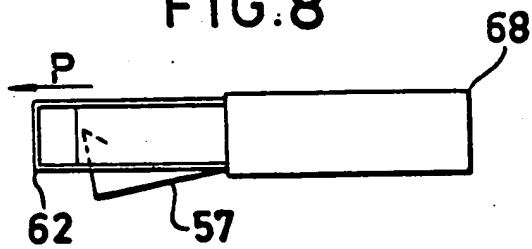
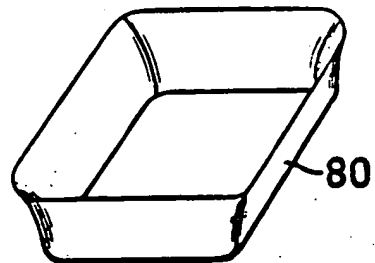


FIG. 9



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FIG. 1

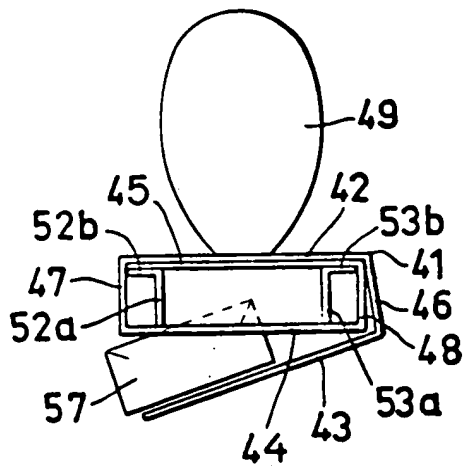


FIG. 2

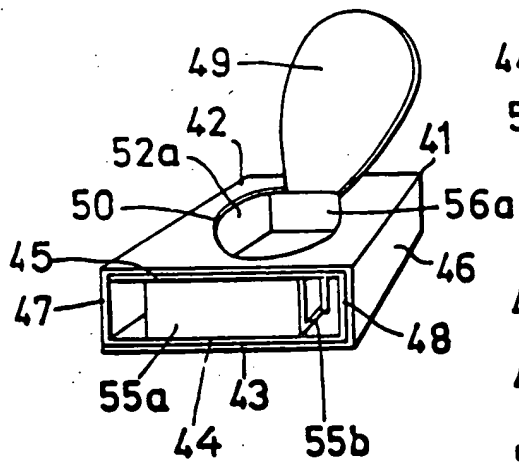


FIG. 3

